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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/849,195	05/20/2004	Karl M. Guttag	KAGU-0002-UTY	7299

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EXAMINER	
DHARIA, PRABODH M	
ART UNIT	**PAPER NUMBER**
2673	

DATE MAILED: 12/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/849,195	GUTTAG ET AL.	
	Examiner	Art Unit	
	Prabodh M. Dharia	2673	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 October 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15 and 169* is/are pending in the application.

4a) Of the above claim(s) *16-168* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14 and 169* is/are rejected.

7)☒ Claim(s) *15* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 May 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *05-31-05*, 01-06-05, 08-12-04
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. **Status:** Receipt is acknowledged of papers submitted on October 20, 2005 under amendments and new claim, which have been placed of record in the file. Claims 1-15,169 are pending in this action. Claims 16-168 are withdrawn from consideration.

Response to Amendment

2. The claims 16-168 have been withdrawn from consideration and they were restricted as they represent several different inventions.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-4,6-8,12,14 and 169 are rejected under 35 U.S.C. 103(a) as being unpatentable over Willis (2004/0036707 A1) in view of Scheffer et al. (5,585,816).

Regarding Claim 1, Willis (2004/0036707 A1) teaches a device (page 1, paragraph 2, teaches light modulating display device) comprising: electrode means (page 2, paragraphs 24-26, teaches global drive circuit applied modulated signal across pixel electrode to drive light modulating element or display element or pixel) comprising at least one electrode (page 2, paragraph 24, Lines 5,6) for controlling (page 2, paragraphs 25,26, teaches global drive circuit

applied modulated signal across pixel electrode to drive light modulating element or display element or pixel) a light modulating element (page 2, paragraph 24, Line 1-7 teaches light modulating element or display element or pixel) of an array of light modulating elements (page 2, paragraph 24, Line 6 teaches light modulating element or display element or pixel array) said pulse width driving said electrode means (page 2,3, paragraph 32, paragraph 25, Lines 6-13, paragraph 26).

However, Willis (2004/0036707 A1) fails to teach a device comprising recursive feedback control means for controlling at least one pulse width using recursive feedback.

However, Scheffer et al. teaches and recites recursive feedback (item 96, figure 12, figure 6, Col. 10, Lines 13-18 teaches shift register with feedback connection using exclusive-or gates Col. 10, Lines 57-61 teaches shift register with feedback connection using exclusive-or gates determines logic state of the shift register using recursive relation); control means for controlling at least one pulse width using recursive feedback [(item 96, figure 12, figure 6, Col. 10, Lines 13-18 teaches shift register with feedback connection using exclusive-or gates Col. 10, Lines 57-61 teaches determines logic state of the shift register with feedback using recursive relation, Col. 10, Lines 22-25, recursive feed back circuitry depends on the number of stages selected to output required pulse width from; see tables 1,2,3 Col. 3, Lines 27-30, teaches see figure 11, item 88, Column signals 30_1-30_M, Col. 18, Lines 25,26, Col. 20, Lines 46-56; are generated per pixel value (Col. 20, Lines 15-19) using (Col. 18, Lines 46-50 see figure 11, item 88, $S(\Delta t_k)$) swift function generator, Col.25, Line 52 to Col. 26 Line 46 teaches pulse width modulation generation for achieving gray scale using circuitry of figure 6 and figure 12 described in Col. 10, Lines 13-18, 57-61 and see figure 11, item 88, Column signals 30_1-30_M, Col. 18, Lines 25,26,

Col. 20, Lines 46-56], said pulse width driving said electrode means (figures 6, 19, Col. 25, Lines 8-15, Col. 26, Lines 36-46).

In order to achieve applicant's claimed invention one in the ordinary skill in the art would be motivated to combine Schafer et al. 's recursive swift function generator with Willis' (2004/0036707 A1) display system to achieve more accurate gray scale for Willis' (2004/0036707 A1) LCOS display device while displaying video rate high information content on a passive matrix LCD.

Thus it would have been obvious to one in the ordinary skill in the art at the time of invention was made to incorporate the recursive swift function generator of Scheffer et al. in driving the display of Willis (2004/0036707 A1) to be able to control pulse width (Col.25, Line 52 to Col. 26 Line 46) using recursive feedback control circuitry (figure 6, Col. 10, Lines 13-18, 57-61) to achieve gray scale shading a display device like LCD (Col. 25, Lines 25-30, Col. 28, Lines 25-29) and to be able to display video rate high information content on a passive matrix LCD (Col. 3, lines 7-10, Col. 4, Line 66 to col. 5, Line 6, abstract Lines 1-5).

Regarding Claim 2, Scheffer teaches display device; comprising recursive feedback is based on an output bit (see flowchart 11, Col. 17, Line 22 to Col. 18, Line 12, flowchart 14, Col. 20, Line 57 to Col. 21, Line 2 teaches the recursive feedback is based on drive output bit).

Regarding Claim 3, Scheffer teaches recursive feedback is based on a output bit is drive output bit (see flowchart 11, Col. 17, Line 22 to Col. 18, Line 12, flowchart 14, Col. 20, Line 57 to Col. 21, Line 2 teaches the recursive feedback is based on a drive output bit).

Regarding Claim 4, Scheffer teaches recursive feedback is based on an output bit is a intermediate output bit (see flowchart 11, Col. 17, Line 22 to Col. 18, Line 12, flowchart 14, Col. 20, Line 57 to Col. 21, Line 2 teaches the recursive feedback is based on a intermediate output bit which is not a drive output bit).

Regarding Claim 6, Scheffer et al. teaches panel interface controller (display panel Col. 3, Line 10, interface controller (Col. 16, Line 62 to Col. 17, Line 15).

Regarding Claim 7, Willis (2004/0036707 A1) teaches electrode means comprises at least two electrodes (page 2, paragraph 24, Lines 5,6).

Regarding Claim 8, Willis (2004/0036707 A1) teaches array of light modulating elements is part of a visual display apparatus (page 2, paragraph 24, Line 6 teaches light modulating element or display element or pixel array).

Regarding Claim 12, Scheffer et al. teaches at least one pulse width comprises at least two pulse width (figure 6, Col. 18, Lines 35-52, Col. 10, Lines 7-25, teaches using figure 6, type recursive feed back generates (control) different pulse width (multiple pulse widths combined or pulse width divided), defined as time interval, since time interval of column signal (video data) defines the pulse width of the column signal).

Willis (2004/0036707 A1) teaches at least one pulse width comprises at least two pulse width (page 4, paragraph 48, Lines 1-4, page 1, paragraph 5, Lines 7-9, figures 1,2,5-7, paragraphs 6, 8).

Regarding Claim 14, Willis (2004/0036707 A1) teaches a visual display apparatus including said array of light modulating elements (page 2, paragraph 24, Line 6 teaches light modulating element or display element or pixel array, page 1, paragraph 2, teaches light modulating display device).

Scheffer et al. teaches Visual display apparatus (Col. 1, Lines 11,12) including said arrays of light modulating element (see abstract, Col. 5, Lines 19-46, Col. 6, Lines 1-16, pixels are considered as light emitting and modulating element, arrayed liquid crystal molecules) between tow glass (silica byproduct) substrates (front and back, glass plates) (Col. 5, Lines 18-27).

Regarding Claim 169, Willis (US 2004/0036707 A1)) teaches a visual display apparatus including said array of light modulating elements (page 2, paragraph 24, Line 6 teaches light modulating element or display element or pixel array, page 1, paragraph 2, teaches light modulating display device).

5. Claims 5,9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Willis (US 2004/0036707 A1) in view of Scheffer et al. (5,585,816) as applied to claims 1-4 above, and further view of Dallas et al. (US 2004/0263502 A1).

Regarding Claim 5, the combination of Willis (US 2004/0036707 A1) modified by Scheffer et al. fails to teach device includes a backplane and wherein said backplane includes said recursive feedback control means.

However, Dallas et al. teaches LCOS (page 7,paragraph 75, Lines 9-11) with silicon back plane having various driving circuitry (page 8, paragraphs 81, Lines 4-6, paragraph 82, Lines 1-4, 7-14, paragraph 83, Lines 1-4).

In order to achieve applicant's claimed invention one in the ordinary skill in the art would be motivated to combine Willis teaching of LCOS light modulating element driving and Schafer et al. 's teaching of recursive feedback circuitry with Dallas et al. teaching of LCOS with silicon backplane able to have various circuitry such that Shafer's recursive feedback circuitry could be implemented on Dallas silicone backplane.

Thus it would have been obvious to one in the ordinary skill in the art at the time of invention was made to incorporate the teaching of Dallas et al. in to the teaching of Willis modified by Scheffer et al. to be able to implement on Dallas et al. LCOS (page 7,paragraph 75, Lines 9-11) silicone backplane the circuitry (page 8, paragraphs 81, Lines 4-6, paragraph 82, Lines 1-4, 7-14, paragraph 83, Lines 1-4); (of Schafer's et al.'s) to control pulse width (Col.25, Line 52 to Col. 26 Line 46) using recursive feedback circuitry (figure 6, Col. 10, Lines 13-18, 57-61).

Regarding Claim 9, Dallas et al. teaches arrays of light modulating element (liquid crystal pixels) on a silicon backplane (page 8, paragraph 81, Lines 1-7, page 7, paragraph 79, Lines 1-6).

6. Claims 10,11,13 rejected under 35 U.S.C. 103(a) as being unpatentable over Willis (US 2004/0036707 A1) in view of Scheffer et al. (5,585,816) as applied to claims 1-4 above, and further view of Willis (US 2003/0156083).

Regarding Claims 10,11, the combination of Willis (US 2004/0036707 A1) modified by Scheffer et al. fails to teach explicit and implicit (as defined by applicant's specification US PG PUB 2004/0233150, paragraphs 52,82,113).

However, Willis (US 2003/0156083) teaches explicit and implicit (page 2, paragraph 18, Lines 1-3) (as defined by applicant's specification US PG PUB 2004/0233150, paragraphs 52,82,113) per old and news pixel values. (figures 3,4, page 1, paragraphs 15,16, page 2, paragraphs 16-20).

In order to achieve applicant's claimed invention one in the ordinary skill in the art would be motivated to combine Willis (US 2004/0036707 A1) teaching of LCOS light modulating element driving and Schafer et al. 's teaching of recursive feedback circuitry with Willis (US 2003/0156083) teaches explicit and implicit able to have various circuitry such that Shafer's recursive feedback circuitry could be implemented on with Willis' (US 2003/0156083) explicit and implicit teaching.

Thus it would have been obvious to one in the ordinary skill in the art at the time of invention was made to incorporate the teaching of Willis (US 2003/0156083) in to the teaching of Willis (US 2004/0036707 A1) modified by Scheffer et al. to be able to implement Willis (US 2003/0156083) teaching of explicit and implicit per applicant's specification (figures 3,4,page 1,

paragraphs 15,16, page 2, paragraphs 16-20); (of Schafer's et al.'s) to control pulse width (Col.25, Line 52 to Col. 26 Line 46) using recursive feedback circuitry (figure 6, Col. 10, Lines 13-18, 57-61).

Regarding Claim 13, Scheffer et al. teaches pixel value bits for controlling a pixel value (Col. 25, Lines 58-61, Col. 6, Lines 1-16, Col. 19, Line 51 to Col. 20, Line 18, pixels are considered as light emitting and modulating element, abstract, Col. 25, lines 31-38 where light is being controlled by modulating frames) of the pulse width (Col. 20, lines 29-38) and recursive feedback control means only uses some of said pixel value bits to determine a next state of the pulse width (figures 6, 17, Col. 20, Lines 15-38, Col. 10, Lines 7-25, teaches using figure 6, type recursive feed back generates (control) different pulse width (multiple pulse widths combined or pulse width divided), defined as time interval, since time interval of column signal (represents video data or pixel value) defines the pulse width of the column signal, and Col. 20, Line 15 to Col. 21, Line 2, teaches using recursive feedback using pixel value bits to determine next state of the pulse width).

Willis (US 2003/0156083) teaches only uses some of said pixel value bits to determine a next state of the pulse width (page 2, paragraphs 17-19)

Allowable Subject Matter

7. Claim 15 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is an examiner's statement of reasons for allowance:

a device comprising: electrode means comprising at least **one electrode for controlling a light modulating element of an array of light modulating elements; and recursive feedback control means for controlling at least one pulse width using recursive feedback, said pulse width driving said electrode means and array of light modulating elements is part of a visual display apparatus; and said visual display apparatus is an LCOS device; wherein said visual display apparatus includes pH indicating means indicating when a liquid crystal and/or the environment surrounding said liquid crystal of said visual display apparatus is damaged.**

Cited references on 892's fails to anticipate individually as well as render obviousness individually or in combination bold and underlined claimed above.

9. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

10. Applicant's arguments filed 10-20-2005 have been fully considered but they are persuasive regarding Claim 15.

Examiner has agreed per personal interview on 10-13-2005 with one of the applicant and applicant's representative to withdraw rejection to Claim 15 and Claim 15 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Examiner had agreed to withdraw finality of office action mailed on 08-04-2005. However, upon further consideration, a new ground(s) of rejection is made in view of Cited references of Willis (US 2004/0036707 A1), Willis (US 2003/0156083) and Dallas et al. (US 2004/0263502 A1). This references specifically focuses on applicant's teaching and claimed invention. Examiner has considered the applicant's request to use applicant's specification for applicant's claimed limitations' definitions and explanations.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Worley, III (6,326,980 B1) System and method for using compound data words in a field sequential display driving scheme.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Prabodh M Dharia whose telephone number is 571-272-7668. The examiner can normally be reached on M-F 8 AM to 5 PM.

13. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

14. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

PD

AU2673

December 10, 2005

VIJAY SHANKAR
PRIMARY EXAMINER